

material to support the roadway pavement adequately during rolling operations. After the pavement is constructed, the temporary shoulders shall be carefully removed and satisfactorily disposed of by the Contractor prior to construction of the permanent shoulders.

Where necessary, temporary shoulders shall be constructed in conjunction with the construction of paved shoulders in the same manner as prescribed above for roadway pavement.

When shoulders are to be loamed and seeded, the construction method shall be as specified in Section 765 for such work.

Sodding of shoulders shall be done in conformity with the requirements of Section 770 for Field Sodding.

Ordinary borrow, gravel borrow and loam shall be furnished, placed and rolled in accordance with the requirements of Section 150 and as specified herein.

Paving of shoulders shall be done in the manner specified in the particular section of these specifications relating to the kind of pavement or surfacing to be used in this work.

At all times construction shall be so carried on that effective and adequate drainage will be provided.

The full widths of all shoulders except paved or sodded areas shall be reformed, trimmed, raked and rolled before the final completion of the work and the surface when finished shall conform to the proposed grade and cross section.

## **COMPENSATION**

### **445.80 Method of Measurement.**

All borrow materials for shoulders will be measured by the cubic meter in accordance with the provision of Subsection 150.80.

Surfacing materials for paving shoulders will be measured as specified in the particular section for the kind of pavement required.

Sodding will be measured by the square meter as specified in Subsection 770.80.

### **445.81 Basis of Payment.**

Payment for grading of shoulders composed of material obtained from excavation will be included in the price paid for removal and disposal of the type of excavation used.

When composed of borrow, shoulders will be paid for at the contract unit price per cubic meter of borrow, of the kind required as specified in Subsection 150.81.

Compensation for the removal and disposal of temporary shoulder material will be included in the contract unit price under the item for the kind of material used in the roadway pavement or permanent shoulder.

When shoulders are paved with surfacing materials, such materials will be paid for at the contract unit prices for the kinds of materials used in the pavement as specified in the particular section relating to the kind of pavement or surface ordered.

When sodding is used on shoulders, it will be paid for at the contract unit price per square meter under Item for Field Sodding, complete in place, as specified in Subsection 770.81.

The fine-grading and rolling of the subgrade upon which shoulders are constructed will be paid for at the contract unit price per square meter under Item 170 - Fine Grading and Compacting (In Subgrade Areas).

## **SECTION 460**

### **CLASS I BITUMINOUS CONCRETE PAVEMENT, TYPE I-1**

#### **DESCRIPTION**

### **460.20 General.**

This type of pavement shall be composed of mineral aggregate, mineral filler and bituminous material. The pavement shall be constructed in courses as shown on the plans and as directed on the prepared or existing base in accordance with these specifications and in close conformity with the lines, grades, compacted thickness and typical cross section shown on the plans.

#### **460.21 Composition and Compaction Acceptance Tests.**

Where plant inspection is maintained, the material will be considered acceptable for use when the specified tests from samples obtained at the production plant indicate conformance to M3.11.09.

The densities of the completed pavement shall not be less than 95% of the density obtained from Laboratory compaction of a mixture composed of the same materials in like proportions. Laboratory compaction will be performed by Department Standard Methods as outlined in M3.11.00.

The bituminous mixture and the labor for obtaining these samples in the field shall be furnished without charge by the Contractor. The samples shall be taken in accordance with AASHTO T 230.

### **MATERIALS**

#### **460.40 General.**

Materials shall meet the requirements in the following Subsection of Division III, Materials:

Mineral Aggregate	M3.11.04
Mineral Filler	M3.11.05
Bituminous Materials	M3.11.06

### **CONSTRUCTION METHODS**

#### **460.60 General.**

The Engineer may require the Contractor to remove and replace at his/her own expense, any defective mix not conforming to the specified job mix formula within the stipulated tolerances on the basis of the Department testing. Samples of the actual mixture in use will be taken as many times daily as necessary and the mixture shall be maintained uniform for the project as specified herein. The Engineer may suspend further approval for use of the Plant mixtures in Department work if the mixtures are not uniformly furnished as specified until any necessary changes have been made so that the mixtures do conform to the specified requirements.

If, at any time before the final acceptance of the work, any soft, imperfect places or spots shall develop in the surface all such places shall be removed and replaced with new materials and then compacted until the edges at which the new work connects with the old become invisible.

Grade control survey shall conform to Subsection 5.07. The Contractor shall furnish, set, and maintain all line and grade stakes necessary to guide the automated grade control equipment. Where required these control stakes shall be maintained by the Contractor and used throughout the operations, from the grading of the sub-base material up to and including the final layers of the pavement.

With prior approval of the Engineer and with no increase in cost, a plant may substitute a limited amount (up to 1000 metric tons per project) of binder mix for black base. The substitution will be only within the station limits, locations, depths and tonnage as permitted by the Engineer.

The Contractor will supply an approved dial type asphalt thermometer (range of 10 °C to 260 °C) for each paving machine in operation on the project. The thermometers will remain the property of the Contractor upon completion of the project.

Under normal conditions, where more than one course of bituminous concrete is to be constructed, the use of the stringline for grade control may be eliminated or discontinued after the construction of the initial layer of bituminous concrete. For resurfacing projects, where only one course of bituminous concrete is to be constructed, the use of the stringline for grade control may be eliminated. The use of an approved "ski" may then be substituted for the stringline where lines and grades are found to be satisfactory by the Engineer.

On each contract specifying 4000 metric tons of pavement or more, the Contractor shall submit for approval a schedule of proposed paving and compaction equipment. The schedule shall project approximate daily production for the “paving train” and provide sufficient data for proper evaluation of paving and compaction procedures.

#### **460.61 Transportation and Delivery of Mixtures.**

The mixtures shall be transported from the plant to the work in vehicles previously cleaned of all foreign materials. During transportation of the mixture from the plant to the spreader on the work, each load shall be fully covered at all times, without exception, with canvas or other suitable material of sufficient size and thickness to furnish complete protection. The mixture shall not be transported such a distance that segregation of the ingredients takes place or that any crust if formed on the surface, bottom or sides of said mixture which will not crumble or flatten out when the mixture is dumped or shall otherwise be deleterious to the mixture in place on the roadway.

The vehicles for transporting the mixture shall be tight and inside of the bodies shall be evenly and lightly coated with a suitable thin oil or approved soap solution, but no excess of lubricant shall be allowed to accumulate in low spots in the body.

During paving operations, the Contractor shall provide continuous radio communication between the plant and the project to insure immediate response due to breakdowns, emergencies such as accidents, and to insure the best quality results possible.

When necessary, proper insulation of the vehicles transporting the mixture shall be made to insure that the mixture is delivered for placing at the proper temperature.

The dispatching of trucks from the plant shall be so arranged that all material which is to be delivered at or on the road surface during any day may be placed and shall have received final compaction before nightfall of the same day; unless artificial light, satisfactory to the Engineer is provided.

The temperature of the mixture, within a tolerance of plus or minus 9 °C, when delivered at the project site will be governed by the temperature of the base upon which the mix is placed as follows:

	Mat Thickness in millimeters					
Base temperature in ° C on which mix is placed	12.5	19	25	37.5	50	75 or Greater
2.0 - 4.5				152	146	138
4.5 - 10.0			154	149	141	135
10.0 - 15.5		154	149	146	138	132
15.5 - 21.0	154	149	143	141	135	129
21.0 - 26.5	149	143	141	138	132	129
26.5 - 32.0	143	138	135	132	129	127
32.5 +	143	135	132	129	127	124

#### **460.62 Tack Coat.**

When it is required that the existing hardened surface shall be utilized as a base for the new pavement, a tack coat of bituminous material of the kind and grade shown on the plans shall be uniformly applied by mechanical means to the present surface, at the rate of application of either 0.20 liters per square meter or that and by the method indicated on the plans or as directed by the Engineer, immediately prior to laying the bottom course of the new pavement.

When and if the surface is in a condition which in the Engineer’s judgment is unsatisfactory for the direct placement of the surface course, it shall be sprayed as specified above with tack coat in the amount and by the method

directed by the Engineer.

When a tack coat is required and its need is found to be the direct fault of the Contractor the surface shall be treated with a tack coat as directed by the Engineer and the entire cost for such treatment shall be entirely borne by the Contractor.

The existing surface shall be cleaned of all foreign matter and loose material and shall be dry before the tack coat is placed.

#### **460.63      Spreading and Finishing.**

The equipment for spreading and finishing shall be mechanical, self powered pavers, capable of spreading and finishing the mixture true to line, grade, width, and crown by means of fully automated controls for both longitudinal and transverse slope.

The pavers shall be equipped with hoppers and distributing screws of the reversing type to place the mixture evenly in front of adjustable screeds. They shall be equipped with a quick and efficient steering device and shall have reverse as well as forward traveling speeds.

The pavers shall employ mechanical devices such as equalizing runners, straight edge runners, eveners arms or other compensating devices to adjust the grade and confine the edges of the mixture to true lines. They shall be capable of spreading the mixture without segregation in layers to the depths and widths required. They shall be equipped with automatic joint matching attachment for use on adjacent mat or curb; automatic grade and slope control with a floating beam mobile reference system with minimum length of beam ("ski") of 9 meters for averaging longitudinal errors in the grade over which paving is being performed. The joint matching attachment and floating beam mobile reference system shall be employed on all paving courses unless otherwise directed by the Engineer.

When extensions are added to the paver, they shall be provided with the same vibrating screed or tamper action as the main unit of the paver, except for paving variable width areas. The extensions shall also be equipped with a continuation of the automatically controlled spreading augers. The screed and any extensions shall be provided with an approved method of heat distribution.

The screed shall be adjustable for profile and shall have an indicating level attached.

An approved device will be required for heating the screed to the temperature required for the laying of the mixtures without pulling or marring.

The term "screed" includes any "strike-off" device operated by cutting, crowding, or other practicable action, which is effective on the mixtures at permissible workable temperatures without tearing, shoving, or gouging and which produces a finished surface of the evenness and texture required.

The pavers employed on projects requiring in excess of 10 000 metric tons shall be capable of operating by the use of a sensing grid for operation to a stringline and matching shoe for joints.

The pavers shall operate while bituminous mixture is being spread at a speed which will produce a uniform surface texture free of any rippling or unevenness.

The paver employed on deep lift construction shall be capable of satisfactorily feeding the mix without intermittent stopping during the discharge of the mix from the trucks into the paving machine.

If during construction it is found that the spreading and finishing equipment in use leaves tracks or indented areas or produces other permanent blemishes in the pavement which are not satisfactorily corrected by the scheduled operations the use of such equipment shall be discontinued and other satisfactory spreading and finishing equipment shall be provided by the Contractor.

The mixtures shall be placed and compacted only at such times as to permit the proper inspection and checking by the Engineer.

The mixtures shall only be placed in the work when they can be efficiently and satisfactorily placed by the methods stipulated herein. Unless otherwise permitted by the Engineer for special particular conditions, only machine methods of placing shall be used.

The construction of bituminous concrete pavement shall terminate November 15 and shall not be resumed prior to April 1 except as determined and directed in writing by the Engineer depending upon the necessity and emergency of attendant conditions, weather conditions, and location of the project.

When the air temperature falls below 10 °C, extra precautions shall be taken in drying the aggregates, controlling the temperatures of the materials, placing, and compacting the mixtures.

No mixture shall be placed unless the breakdown and intermediate rolling can be completed by the time the material has cooled to 75 °C, and provided that the density of the completed pavement attains at least 95% of the laboratory compacted density.

The mixtures shall be placed only upon approved surfaces that are clean from foreign materials and dry and when weather conditions are suitable. The Engineer may however, at the entire responsibility of the Contractor, permit work to continue when overtaken by sudden rain, but only with material which may be in transit from the plant at the time, and then only when the temperature of the mixture is within the temperature limits specified and the existing surface on the roadway is not excessively wet.

A tack coat shall be applied where required as per Subsection 460.62.

The bituminous concrete shall be placed in courses as shown on the plans, as specified and as directed by the Engineer.

When an existing surface or new base upon which the bottom course is to be placed contains unsatisfactory irregularities, in the Engineer's judgment, such irregularities shall be eliminated by an adequate placing and compaction of mixture so as to furnish a surface with true contour and grade before placing any specified course of mixture.

The contact surfaces of bridge curbings, manholes, catch basins or other appurtenant structures in pavement shall be painted thoroughly with a thin uniform coating of bitumen (Specification RS-1) just before any mixture is placed against them.

Special attention shall be given to proper testing of the surface of each course with a straightedge. The finished surfaces shall be even and uniform throughout. (See Subsection 460.67 for "Testing Surfaces")

Any mixture which becomes loose or broken, mixed with dirt, or in any way defective shall be removed and replaced with new mixture which shall be compacted to conform with the surrounding area. Areas of 0.1 square meter or more showing an excess of bitumen shall be removed and replaced.

The methods of spreading the bituminous concrete mixtures shall be as follows:

**A. Machine Spreading.**

All mixtures shall be deposited in an approved mechanical spreader and immediately spread thereby; and then struck off in a uniform layer to the full width required and of such depth that each course, when compacted, shall have the required thickness and shall conform to the grade and cross section contour specified.

The mixture shall be deposited in the center of the hoppers and care exercised to avoid overloading and spilling. The pavers shall operate, while the mixture is being spread, at a speed which will produce a uniform surface texture.

Immediately after any course is screeded and before roller compaction is started, the surface shall be checked, any irregularities adjusted, any accumulation from the screed removed by rake or lute, and all fat spots in any course removed and replaced with satisfactory material. Irregularities in alignment and grade along outside edges shall be corrected by the addition or removal of mixture before the edges are rolled. Indiscriminate casting of mix on the new screeded surface, where irregularities are not evident, shall not be permitted.

All edges shall be true and uniform.

**B. Hand Spreading.**

Spreading by hand methods will be permitted only for particular locations in the work which because of irregularity, inaccessibility or other unavoidable obstacles do not allow mechanical spreading and finishing.

**460.64      Compaction.**

After the paving mixture has been properly spread, initial compaction shall be obtained by the use of power rollers of approved design and mass per millimeter width of roller. The rollers shall be steel wheeled supplemented with pneumatic-tired rollers where required, or where permitted by the specifications, vibratory rollers.

Steel wheel rollers for initial and intermediate rolling shall have a mass of not less than 4.3 kilograms per millimeter width of tread.

Pneumatic-tired rollers, when conditions warrant, shall be provided with devices capable of varying tire pressures. When the mixture being spread by each paver requires more than the minimum number of steel wheel rollers, at least one (1) of the additional rollers for each paver shall be a pneumatic-tired roller, except where the use of a vibratory roller is permitted. When using a pneumatic-tired roller, care shall be taken in that initial rolling by the steel wheel roller be restricted to one pass where upon the pneumatic-tired roller shall immediately follow the initial

steel wheel rolling.

Vibratory rollers may be used on base, binder and surface courses subject to the conditions set forth herein. Vibratory rollers to be used may be of the single drum type with pneumatic-tired drive wheels or the double steel drum type with vibratory mechanism in one or both drums. All vibratory rollers shall have a static mass of at least 7.5 metric tons and shall be equipped with an automatic disconnect device to disconnect the vibratory mechanism when the roller is not in motion. They shall also be equipped with a manual over-ride device to disconnect the vibratory mechanism if the automatic device should fail.

All vibratory rollers shall also be equipped with the following equipment: a large and clearly visible speed indicator; an amplitude setting indicator and a frequency setting indicator. They shall also have instructional plates attached which shall include operational instructions and recommended amplitude and frequency settings. A vibratory tachometer shall also be provided with each roller for use by the Engineer.

Vibratory rollers shall not be used on bridges or other structures and their use in urban areas may be restricted. They shall not be used on thin overlays 25 millimeters or less in thickness, except that vibratory rollers of the double drum type may be used in a static condition to compact such overlays, provided that when so operated they shall be able to obtain the degree of density and smoothness required to conform to the specifications.

When vibratory rollers are used for the compaction of base and binder material they shall be operated at a high amplitude setting and a low frequency setting in the range of 1500 to 1700 VPM. When used for the compaction of surface courses they shall be operated at a low amplitude setting at a minimum frequency setting of at least 2200 VPM or higher, if a higher frequency setting is recommended by the manufacturer of the roller. The use of a vibratory roller incapable of being operated at a frequency setting of at least 2200 VPM will not be permitted on surface courses. No deviation from this latter requirement will be allowed. In compacting surface courses a vibratory roller shall not be operated at a speed in excess of 5 kilometers per hour.

A vibratory roller shall be operated with the vibration drum or drums in the direction of the paver and the vibrating action of the roller shall be completely shut off during change of direction. Due care shall be exercised to start the vibratory action only when the roller is in motion. During the rolling of layered pavement, in order to prevent creeping and aggregate crushing, care shall be taken not to exceed two passes with the vibrator in action. For deep lift pavements, these passes shall normally not exceed two in each direction, except that the number of vibratory passes in either direction may be varied in order to obtain the required density.

The final rolling of all courses shall be performed with a steel wheeled roller of sufficient mass for final smoothing of the surface.

The use of a vibratory roller may be suspended by the Engineer if, in his/her opinion, satisfactory results are not being obtained and no further amount of mix shall be spread in such case until a sufficient number of approved rollers are on the project site to satisfy compaction requirements.

A plate shall be attached to each conventional roller which shall show the ballasted and unballasted mass per millimeter of tread.

The number of rollers required shall be governed by the tonnage of hot-mix being placed daily. A sufficient number shall be provided to compact the mixture in accordance with the specifications. The number of passes required may be varied and shall be governed by compaction results. The Engineer may require that a stand-by roller be provided if in his/her opinion it is necessary in the event of a breakdown.

Each roller shall be operated by a competent, experienced roller operator and shall be kept in a nearly continuous operation as practicable while work is underway. The mixture shall be rolled longitudinally, diagonally and transversely as may be necessary to produce the required contour for surface. Longitudinal rolling shall start at the side and proceed toward the center of the pavement, except on superelevated curves where the rolling shall begin on the low side and progress to the high side, overlapping on successive trips by at least 300 millimeters. The rolling shall be continued and so executed that all roller marks, ridges, porous spots and impressions are eliminated and the resulting surface has the required grade and contour. The motion of the rollers shall at all times be slow enough to avoid any displacement of the hot mixture. Any displacement or marring of the surface occurring as a result of reversing the direction of the rollers, or from any other cause, shall be corrected. To prevent adhesion with the mixture, the wheels of the steel rollers shall be kept lightly moistened with water but excess water will not be permitted. The use of oil for this purpose will not be allowed.

To prevent "rolloff" of the pavement edges and longitudinal joints on deep lift paving, the outer 200 millimeters  $\pm$  of the deep lift mixture shall be left unrolled until the temperature of the mix ranges between, 65 °C and 80 °C, whereupon it shall be compacted by the steel roller.

Along curbs, structures and all places not accessible with a roller, the mixture shall be thoroughly compacted with mechanical tamping devices. The surface of the mixture after compaction shall be smooth and true to the established line and grade.

The densities of the completed pavement shall not be less than 95% of the density obtained from Laboratory compaction of a mixture composed of the same materials in like proportions. Laboratory compaction will be performed by Department Standard Methods.

**460.65 Joints.**

Placing of the mixture shall be as nearly continuous as possible and the roller shall pass over the unprotected end of the newly placed mixture only when the placing of the course is to be discontinued for such length of time as would permit the mixture to attain initial stability. In all such cases, including the formation of joints as here specified, provision shall be made for proper bond with the new surface for the full specified depths of the courses.

All transverse joints, all longitudinal joints of the surface course and all longitudinal joints in the Dense Binder Course under Open Graded Friction Course or Open Graded Friction Course-Modified shall be treated prior to laying the next lane of bituminous concrete as follows:

The joint shall be coated with a hot poured rubberized asphalt sealant meeting the requirements of Federal Specification Number SS-S-1401.

When using pavers in tandem, the use of the hot poured rubberized asphalt sealer may be omitted at the discretion of the Engineer, if the temperature of the mixture at the longitudinal joint does not fall below 95 °C prior to the placement of the adjacent mat. No reheating of the joint shall be permitted.

The hot poured rubberized asphalt shall be applied to the joints from a double jacketed heating kettle with a positive drive gear pump that is connected to a suitable applicator. The nozzle of the applicator shall be set to deliver sufficient sealant to effectively bond and seal the transverse and longitudinal paving joint between two adjacent lanes of bituminous concrete.

Longitudinal and transverse joints shall be made in a careful manner, well bonded and sealed, and true to line and grade. Where and as directed, transverse joints for all courses and longitudinal joints for the top course placed under this or previous contracts shall be cut back to expose the full depth of the course and, when the laying of the course is resumed, the exposed edge of the joint shall be treated as above.

In making joints along any adjoining edge such as curb, gutter or an adjoining pavement, and after the mixture is placed by the mechanical spreader, just enough of the hot material shall be placed by hand method to fill any space left open. These joints shall be properly "set-up" with the back of a rake at the proper height and level to receive the maximum compaction. The work of "setting-up" these joints shall be performed only by competent workers.

Where and as directed, the first width of any course shall be placed not less than 300 millimeters wider than the first width of top course, and successive widths of top and as any other courses shall be so placed that there will be at least a 300 millimeter overlap between the joints in the top course and the other course.

The rolling of the successive widths of courses shall overlap and shall be performed so as to leave smooth, uniform joints and cross sections.

**460.66 Pavement on Bridges.**

The bituminous concrete mixtures for protective course paving on bridges shall consist of "Dense Binder Course" as specified hereinbefore for such mix and work performance requirements. The mixtures shall be treated with an approved antistripping compound as specified under M3.10.0.

The protective course over any area shall be placed within 24 hours after the membrane waterproofing over the area has been placed unless exception is granted by the Engineer.

The use of smaller rollers may be permitted, with the approval of the Engineer for compaction of the protective course only.

No vehicular traffic shall be permitted over any bare membrane waterproofing except as provided for under Subsection 965.62.

The top course of pavement on bridges shall consist of "Modified Top Course" and be placed only after the curbing and edging are in place in the work.

**460.67      Testing Surfaces.**

The plane of the finished surfaces of the base courses and/or binder course and the top course of the compacted mixtures, shall be tested with a 5 meter straightedge, except that a 3 meter straightedge may be used on vertical curves. The straightedge shall be carefully applied immediately after first compaction by rolling and, from then on, as may be necessary until and after the final compaction of the material in place. The straightedge shall be held in successive positions parallel to the road centerline and in contact with the road surface; and the entire area checked from one side to the other of the pavement.

The top course of resurfaced streets which contain manhole covers, water gate boxes, etc., shall be tested as specified hereinbefore except that a 3 meters straightedge shall be used. Any irregularities which vary 5 millimeters from a true finished surface or 10 millimeters from a true surface in base or binder course shall be corrected.

Irregularities which may develop before the completion of rolling and while the material is still workable, may be remedied by loosening the surface mixture and removing or adding material as necessary. Should any irregularities or surface defects remain after final compaction the defective work shall be corrected by removing and replacing the new material, as specified to form a true and even surface of regular texture. All minor surface projections, joints and minor honeycombed surfaces shall be ironed out smoothly to grade, as may be directed.

Adequate and approved straightedges shall be furnished and used by the Contractor with supervision and inspection by the Engineer. The Contractor shall provide or designate a competent employee whose duty shall be to carefully use the straightedge to check the compacted surfaces.

The entire cost for furnishing adequate and approved straightedges with the use of same and the repair or removal and replacement of pavement, as may be required by the Engineer, shall be borne by the Contractor as part of the payment made to him/her for the relevant contract items.

**460.68      Opening to Traffic.**

No vehicular traffic or loads shall be permitted on the newly completed pavement until adequate stability has been attained and the material has cooled sufficiently to prevent distortion or loss of fines. If the climatic or other conditions warrant it, the period of time before opening to traffic may be extended at the discretion of the Engineer.

**COMPENSATION****460.80      Method of Measurement.**

Bituminous concrete shall be measured by the metric ton and shall be the actual and verified metric tonnage, complete in place and approved. The quantity shall be determined only by weight slips that have been properly countersigned by the Engineer at the time of delivery.

Bitumen used for tack coat, if required by plans or specifications or ordered by the Engineer, will be measured as specified in Subsection 468.80.

Measurement for sealing of longitudinal joints in bituminous concrete shall be by the meter of joint sealed.

**460.81      Basis of Payment.**

The metric tonnage of bituminous concrete, determined as provided above, will be paid for at the contract unit price per metric ton of the kind of bituminous concrete required, complete in place including butt joint sealant, if required.

Bitumen as specified herein to be paid for as tack coat, if required, will be paid for at the contract unit price per liter under the item for Bitumen for Tack Coat, complete in place.

Sealing of longitudinal joints in bituminous concrete will be paid for at the unit bid price and shall be complete payment for sealing the edge of the previously laid mat with hot poured rubberized asphalt sealer and all incidentals required to complete the item.

**460.82      Payment Items.**



460.	Class I Bituminous Concrete Pavement, Type I-1	Metric Ton
460.2	Class I Bituminous Concrete Pavement Type I-1 Open Graded	Metric Ton
461.	Class I Dense Bituminous Concrete, Type ST	Metric Ton
462.	Class I Dense Binder Course for Bridges	Metric Ton
464.	Bitumen for Tack Coat	Liter
464.5	Hot Poured Rubberized Asphalt Sealer	Meter

## SECTION 466

### STRESS ABSORBING MEMBRANE INTERLAYER

#### DESCRIPTION

##### 466.20 General.

This work consists of the application of hot, rubberized asphalt to a paved surface and immediately embedding aggregate therein by spreading and rolling in accordance with these specifications. This item may also be referred to as SAMI.

#### MATERIALS

##### 466.40 General.

Asphalt: Asphalt cement for the asphalt rubber mixture shall be AC-10 or AC-20, complying with the requirements of M3.01.0. If AC-10 is used, the SAMI shall be overlaid within ten (10) days.

Rubber: The granulated rubber shall be a vulcanized rubber product from the ambient temperature processing of pneumatic tires.

The granulated rubber type shall meet the following gradation:

Sieve Designation	Percent Passing
2.36 mm	100
2.00 mm	95-100
1.18 mm	—
600 µm	0-10
300 µm	0-5

Aggregate shall conform to the requirements of M2.01.0 for crushed stone. Crushed gravel stone *will not* be permitted. Gradation requirements will conform to M2.01.6. Percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO T 96) shall be a maximum of 30.

#### CONSTRUCTION METHODS

##### 466.60 General.

##### Preparation of Existing Surface.